AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

○

LISTING OF CLAIMS:

1.   (PREVIOUSLY PRESENTED) In a data access network system that includes a content server coupled to a plurality of proxy servers via an interconnect network, a system of maintaining content consistency between the content server and proxy servers, comprising:

a subscription manager in the content server for specifying all of the proxy servers that are subscribed to a content file stored in the content server, wherein the subscription manager generates a subscription list that specifies all of the subscribed proxy servers that cache the content file when the subscription manager is notified by each of the proxy servers that it has cached the content file; and

a consistency manager also in the content server for notifying all of so subscribed proxy servers that cache the content file when the content file is updated in the content server to discard the cached content file from those proxy servers.

2.   (CANCELED)

3.   (PREVIOUSLY PRESENTED) The system of claim 1, wherein a proxy server notifies the subscription manager that it has cached the content file via an HTTP GET request with a SUB (Subscription) header when the proxy server decides that the content file should be subscribed.

4.   (ORIGINAL) The system of claim 3, wherein if the proxy server decides that the content file is not a popular file, then that proxy sever does not notify the subscription manager that it has cached the content file.

5.   (ORIGINAL) The system of claim 1, wherein the consistency manager notifies each of the subscribed proxy servers via a DWS INV message when a content file has changed.

6.   (ORIGINAL) The system of claim 1, wherein the consistency manager also sends an updated content file to each of the proxy servers via an HTTP PUT request with a DWS SUB header.

7.   (ORIGINAL) The system of claim 1, wherein the consistency manager notifies all of the proxy servers specified by the subscription manager to discard the cached content file from the proxy severs when the content file is updated or deleted in the content sever within a predetermined time interval.

8-15.   (CANCELED)

16.   (NEW)   A content server, comprising:
    an engine configured to receive a content request from one or more proxy servers via a network, and configured to transmit a content corresponding to the

content request to each of the one or more proxy servers that has made the content request via the network;

a subscription manager configured to receive a subscription request, via the network, corresponding to the content from one or more of the one or more proxy servers that have made the content request, wherein the subscription request is a separate request from the content request, and the subscription manager is configured to generate a content subscription list, wherein the content subscription list is a list of one or more proxy servers that have subscribed to the content; and

a consistency manager configured to notify, via the network, each proxy server in the content subscription list to discard the content from the proxy server when the content in the content server is modified or deleted.

17.   (NEW) The content server of claim 16, comprising a content storage configured to store the content.

18.   (NEW) The content server of claim 16,

wherein the consistency manager is configured to notify each proxy server in the content subscription list to discard the content from the proxy server when the content in the content server is modified or deleted before a predetermined monitoring time interval corresponding to the content has elapsed, and

wherein the predetermined monitoring time interval defines a time period that the content between the content server and the one or more proxy servers in the content subscription list are deemed to be consistent.

19.   (NEW) The content server of claim 18, wherein when a notification to a proxy server in the content subscription list is unsuccessful, the consistency manager is configured to repeat notification attempts to the proxy server until successful or until the predetermined monitoring interval elapses, whichever comes first.

o

20.   (NEW) The content server of claim 18, wherein the consistency manager is configured not to notify any of the proxy servers in the content subscription list when the content in the content server is modified or deleted after the predetermined monitoring time interval has elapsed.

21.   (NEW) The content server of claim 18, wherein the subscription manager is configured to clear the content subscription list after the predetermined monitoring time interval has elapsed.

22.   (NEW) The content server of claim 21, wherein the subscription manager is configured to clear the content subscription list after the predetermined monitoring time interval has elapsed without notifying any of the proxy servers in the content subscription list.

23.   (NEW) The content server of claim 18,

wherein the content server has a plurality of contents, and

wherein each of the plurality of contents has an associated predetermined monitoring time interval.

24.   (NEW) The content server of claim 18, wherein the subscription manager is configured to set the predetermined monitoring time interval to the content statically.

25.   (NEW) The content server of claim 18, wherein the subscription manager is configured to set the predetermined monitoring time interval to the content dynamically.

26.   (NEW) The content server of claim 25, wherein the subscription manager is configured to set the predetermined monitoring time interval to the content based on a modification history of the content.

27.   (NEW) The content server of claim 19, wherein the subscription manager is configured to notify each proxy server in the content subscription list regarding the predetermined monitoring time interval associated with the content.

28.   (NEW) The content server of claim 16,

wherein the subscription manager is configured to decide whether to allow or grant a subscription for the subscription request based on a local policy, and configured to return an acknowledgment to the requesting proxy server indicating whether the subscription request is granted or not, and

wherein the subscription manager is configured to add the requesting proxy server to the content subscription list when the subscription request is granted for the requesting proxy server.

29.   (NEW) The content server of claim 28, wherein when the subscription request is granted, the acknowledgment includes a predetermined monitoring time interval corresponding to the content, wherein the predetermined monitoring time interval defines a time period that the content between the content server and the one or more proxy servers in the content subscription list are deemed to be consistent.

30.   (NEW) A proxy server, comprising:

an engine configured to receive an access request for a content from a user terminal, configured to send a content request corresponding to the content to a content server via a network, configured to receive the content from content server, and configured to cache the content received from the content server in a cache storage;

a subscription manager configured to send a subscription request, via the network, corresponding to the content to the content server, wherein the subscription request is a separate request from the content request; and

a consistency manager configured to receive a notification, via the network, from the content server to modify or discard the content in the cache storage, and configured to modify or discard the content in the cache storage based on the notification from the content server.

31. (NEW) The proxy server of claim 30, wherein the engine is configured to send the content request to the content server when the content is not cached in the cache storage.

32. (NEW) The proxy server of claim 30, wherein the subscription manager is configured to determine whether or not a consistency scheme is necessary for the content, and configured to send the subscription request when it is determined that the consistency scheme is necessary and configured not to send the subscription request otherwise.

33. (NEW) The proxy server of claim 32, wherein the subscription manager is configured to determine whether or not the consistency scheme is necessary for the content based on a popularity of the content.

34. (NEW) The proxy server of claim 30,

wherein the subscription manager is configured to receive a subscription acknowledgment from the content server after sending the subscription request,

wherein the subscription acknowledgment includes a predetermined monitoring time interval corresponding to the content, and

wherein the predetermined monitoring time interval defines a time period that the content between the proxy server and the content server are deemed to be consistent.

35.   (NEW) The proxy server of claim 34,

wherein the subscription acknowledgement includes an indication of a grant or denial of the subscription request,

wherein the predetermined monitoring time interval is included when the subscription request is granted, and

wherein the subscription manager is configured to repeat the subscription request when the subscription request is denied.

36.   (NEW) The proxy server of claim 34, wherein the consistency manager is configured to modify or discard the content in the cache storage when the notification from the content server is received before the predetermined monitoring time interval elapses.

37.   (NEW) The proxy server of claim 34,

wherein the subscription manager is configured to send a request-if-modified-since message to the content server for the content after the predetermined monitoring time interval elapses, and

wherein the request-if-modified-since message is a message to inquire if the content has been modified or deleted in the content server since a last retrieval from the content server by the proxy server and to provide the modified content from the content server if the content in the content server has been modified.

38.   (NEW) The proxy server of claim 34, wherein the subscription manager is configured to resend the subscription request after the predetermined monitoring time interval has elapsed.

39.   (NEW) The proxy server of claim 38, wherein the subscription manager is configured to resend the subscription request when another access request for the content is received after the predetermined monitoring time has elapsed.

40.   (NEW) The proxy server of claim 38, wherein the subscription manager is configured to resend the subscription request after the predetermined monitoring time has elapsed and prior to receiving another access request for the content is received.

41.   (NEW) The content server of claim 16, wherein the content request and the subscription request are received in a single message.

42.   (NEW) The content server of claim 16, wherein the content request and the subscription request are received in separate messages.

43.   (NEW) The content server of claim 16, wherein the subscription manager is configured to maintain the content subscription list in a global subscription list, wherein the global subscription list includes subscription information regarding a plurality of contents.

44.   (NEW) The content server of claim 16, wherein the subscription manager is configured to maintain a plurality of content subscription list, wherein each of the plurality of content subscription list corresponds to a particular content.